

AMENDMENTS TO THE CLAIMS

Claims 1-2. (Canceled)

Claim 3. (Currently Amended) A ~~The~~ cold cathode light emitting device emitting light by electrons extracted from a cold cathode, comprising: according to claim 1, wherein

_____ a plurality of cathode electrodes;

_____ a plurality of insulating layers laminated over said plurality of cathode electrodes;

_____ a plurality of gate electrodes provided on said plurality of insulating layers to intersect said plurality of cathode electrodes with said plurality of insulating layers interposed therebetween, for extracting electrons from said plurality of cathode electrodes;

_____ an anode electrode opposed to said plurality of gate electrodes for emitting light upon receipt of said electrons, with a voltage for accelerating said electrons being applied between said anode electrode and said plurality of cathode electrodes;

_____ at least one hole provided at each intersection of said plurality of cathode electrodes and said plurality of gate electrodes extending through said plurality of gate electrodes and said plurality of insulating layers to reach a surface of said plurality of cathode electrodes,

_____ said at least one hole having a first diameter at a position where a first of said plurality of insulating layers contacts said plurality of cathode electrodes and a second diameter at a position of said plurality of gate electrodes, where the second diameter is greater than the first diameter; and

_____ a nanofiber-structure layer provided on said plurality of cathode electrodes in an opening portion corresponding to said first diameter in said at least one hole,

_____ wherein said at least one hole is divided into a first section corresponding to a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of ~~first~~ cathode electrodes, a second section corresponding to the remainder of said plurality of insulating layers located over said lowermost insulating layer, and a third section corresponding to said plurality of ~~second~~ gate electrodes; and

said first diameter is in said first section, and said second section includes a diameter which decreases to taper toward said plurality of ~~second~~ gate electrodes.

Claims 4-8. (Canceled)

Claim 9. (Currently Amended) A ~~The~~ cold cathode light emitting device emitting light by electrons extracted from a cold cathode, comprising: according to claim 1, wherein

_____ a plurality of cathode electrodes;

_____ a plurality of insulating layers laminated over said plurality of cathode electrodes;

_____ a plurality of gate electrodes provided on said plurality of insulating layers to intersect said plurality of cathode electrodes with said plurality of insulating layers interposed therebetween, for extracting electrons from said plurality of cathode electrodes;

_____ an anode electrode opposed to said plurality of gate electrodes for emitting light upon receipt of said electrons, with a voltage for accelerating said electrons being applied between said anode electrode and said plurality of cathode electrodes;

_____ at least one hole provided at each intersection of said plurality of cathode electrodes and said plurality of gate electrodes extending through said plurality of gate electrodes and said plurality of insulating layers to reach a surface of said plurality of cathode electrodes,

_____ said at least one hole having a first diameter at a position where a first of said plurality of insulating layers contacts said plurality of cathode electrodes and a second diameter at a position of said plurality of gate electrodes, where the second diameter is greater than the first diameter; and

_____ a nanofiber-structure layer provided on said plurality of cathode electrodes in an opening portion corresponding to said first diameter in said at least one hole,

_____ wherein a lowermost insulating layer of said plurality of insulating layers being in contact with said plurality of ~~first~~ cathode electrodes has a thickness t1, and the remainder of said plurality of insulating layers other than said lowermost insulating layer has a thickness t2, where t1 is smaller than t2.

Claim 10. (Currently Amended) A ~~The~~ cold cathode cathodes-light emitting device emitting light by electrons extracted from a cold cathode, comprising: according to claim 1, wherein

a plurality of cathode electrodes;
a plurality of insulating layers laminated over said plurality of cathode electrodes;
a plurality of gate electrodes provided on said plurality of insulating layers to intersect said plurality of cathode electrodes with said plurality of insulating layers interposed therebetween, for extracting electrons from said plurality of cathode electrodes;

an anode electrode opposed to said plurality of gate electrodes for emitting light upon receipt of said electrons, with a voltage for accelerating said electrons being applied between said anode electrode and said plurality of cathode electrodes;

at least one hole provided at each intersection of said plurality of cathode electrodes and said plurality of gate electrodes extending through said plurality of gate electrodes and said plurality of insulating layers to reach a surface of said plurality of cathode electrodes,

said at least one hole having a first diameter at a position where a first of said plurality of insulating layers contacts said plurality of cathode electrodes and a second diameter at a position of said plurality of gate electrodes, where the second diameter is greater than the first diameter;
and

a nanofiber-structure layer provided on said plurality of cathode electrodes in an opening portion corresponding to said first diameter in said at least one hole,

wherein said plurality of insulating layers are each formed by firing a paste material made of resin containing glass powder dispersed therein, and

a softening point of said glass powder used for said plurality of insulating layers decreases in the order of getting closer to said plurality of ~~second~~ gate electrodes.

Claims 11-17. (Canceled)

Claim 18. (Previously Presented) A cold cathode light emitting device emitting light by electrons extracted from a cold cathode, comprising:

a plurality of first electrodes;

a plurality of insulating layers laminated in said plurality of first electrodes;

a plurality of second electrodes provided on said plurality of insulating layers to intersect said plurality of first electrodes with said plurality of insulating layers interposed therebetween, for extracting electrons from said plurality of first electrodes; and

a third electrode opposed to said plurality of second electrodes for emitting light upon receipt of said electrons, with a voltage for accelerating said electrons being applied between said third electrode and said plurality of first electrodes, wherein

at least one hole is provided at intersections of said plurality of first electrodes and said plurality of second electrodes to extend through said plurality of second electrodes and said plurality of insulating layers to reach a surface of said plurality of first electrodes,

said at least one hole has a first diameter d_1 at a position where said plurality of insulating layers are in contact with said plurality of first electrodes and a second diameter d_2 at a position where said plurality of insulating layers are in contact with said plurality of second electrodes, where d_2 is greater than d_1 ,

a nanofiber-structure layer is provided on said plurality of first electrodes in an opening portion having said first diameter d_1 in said at least one hole,

said plurality of insulating layers are each formed by firing a paste material made of resin containing glass powder dispersed therein, and

a softening point of said glass powder used for said plurality of insulating layers decreases in the order of getting closer to said plurality of second electrodes.